

WHAT IS CLAIMED IS:

- Sub A2*
1. A moving apparatus, comprising:
a flying body, including
a wing portion for fluttering in a space in which a fluid exists,
a driving portion for performing a down stroke in which said wing
portion is moved downward from above and an up stroke in which said wing
portion is moved upward from below, and
a main body to which said wing portion is attached and said driving
portion is mounted; wherein
by time average for the series of said down stroke and said up stroke,
vertically upward force received by said wing portion from said fluid is
larger than gravity acting on said flying body.
 2. The moving apparatus according to claim 1, wherein
volume of said space in which said wing moves in said down stroke is
larger than the volume of said space in which said wing moves in said up
stroke.
 3. The moving apparatus according to claim 1, wherein
said flying body is used as moving means for performing a prescribed
operation indoors.
 4. The moving apparatus according to claim 1, wherein
said flying body is used as moving means for performing a prescribed
operation outdoors.
 5. The moving apparatus according to claim 1, wherein
said wing portion has
a wing body portion, and
a wing shaft portion supporting said wing body portion; and
said driving portion changes a torsion angle formed by a tip end
portion of said wing body portion and a prescribed phantom reference plane,

by driving said wing shaft portion.

6. The moving apparatus according to claim 5, wherein
said driving portion makes said torsion angle in said down stroke
different from said torsion angle in said up stroke.
7. The moving apparatus according to claim 5, wherein
said driving portion changes with time said torsion angle.
8. The moving apparatus according to claim 5, wherein
said wing shaft portion includes one wing shaft portion and the other
wing shaft portion;
said wing body portion includes a film portion formed spreading
5 across said one wing shaft portion and said the other shaft portion; and
said driving portion drives said one shaft portion and said the other
shaft portion separately.
9. The moving apparatus according to claim 5, wherein
said wing shaft portion reciprocates on a phantom plane with said
driving portion serving as a fulcrum;
said main body portion extends along one direction; and
5 an elevation formed by the direction of extension of said body portion
and said phantom plane is variable.
10. The moving apparatus according to claim 1, wherein
said wing portion has
a main shaft portion, and
a wing body portion formed in a direction approximately orthogonal
5 to a direction of extension of said main shaft portion, from said main shaft
portion; and
said driving portion changes a torsion angle formed by a phantom
plane in contact with said wing body portion and a prescribed phantom
reference plane including said main shaft portion, by driving said main

shaft portion.

11.) The moving apparatus according to claim 10, wherein
said driving portion includes an actuator having at least three
degrees of freedom.

12.) The moving apparatus according to claim 10, wherein
said wing portion is formed on one side and the other side of
approximately the center of said body portion; and
said driving portion drives said wing portion formed on said one side
and said wing portion formed on said the other side separately.
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13.) The moving apparatus according to claim 1, comprising
a sensor portion for grasping environmental condition.

14.) The moving apparatus according to claim 1, comprising
a memory portion for storing information.

15.) The moving apparatus according to claim 1, comprising
a communication portion for transmitting and receiving information.

16.) The moving apparatus according to claim 8, wherein
said one wing shaft portion and said the other shaft portion are
formed such that a space therebetween is enlarged toward tip ends of said
one wing shaft portion and said the other said shaft portion.

17.) The moving apparatus according to claim 8, wherein
said one wing shaft portion and said the other wing shaft portion are
pivotable about the respective axes of said one wing shaft portion and said
the other wing shaft portion.

18.) The moving apparatus according to claim 1, wherein
a target manner of movement is realized by time-sequentially combining

basic operations in accordance with basic operations pattern data.

19. The moving apparatus according to claim 18, comprising
storing means for storing combination of said basic operations
pattern data and driving manner data related to the manner of driving said
driving portion realizing said basic operations pattern data.